STATE OF SOUTH DAKOTA CLASS SPECIFICATION

Class Title: CAD Technician **Class Code: 040424**
Pay Grade: GG

A. Purpose:

Creates graphical representations of engineering designs to produce construction plans for roadways, buildings, and other structures.

B. Distinguishing Feature:

CAD Technicians use computerized and conventional designing to draw plan sheets and right-of-way and property plats, compute quantities, and add notes.

C. Functions:

(These are examples only; any one position may not include all of the listed examples nor do the listed examples include all functions which may be found in positions of this class.)

1. Designs preliminary plans to provide an initial, visual project overview for engineering review and landowner meetings.
   a. Compiles data from designing engineer and other design data and transfers to computer files.
   b. Attends site reviews to acquire project information.
   c. Creates or revises existing title, plan, and profile sheets.
   d. Attaches and edits reference files.
   e. Computes stations and offsets for easements and topographical features.
   f. Plots alignments, work limits, and elevations.
   g. Creates rough drafts of typical sections and special sheets.
   h. Transfers preliminary design to aerial photographs for right-of-way and public hearings.

2. Completes construction plans to portray engineering direction for project construction or rehabilitation.
   a. Makes corrections to plans following reviews.
   b. Adds project-specific notes to plan and profile sheets.
   c. Calculates easement area, type, and size.
   d. Plots right-of-way monuments and bench marks.
   f. Calculates and compiles estimates of quantities.
   g. Selects applicable standard sheets.
   h. Assembles and arranges plan sheets in logical order for construction.

3. Designs right-of-way and property plats to identify boundaries, acreage, and property of existing department-owned lands and new right-of-way required; and to prepare for the sale and abandonment of excess property.
   a. Researches certificates of title and previous plans to define existing rights-of-way.
   b. Transfers existing rights-of-way to photographs for landowner meetings.
   c. Attends landowner meetings to record changes and answer questions.
   d. Locates and computes areas of permanent right-of-way required.
   e. Sets property corners, and section, quarter, and property lines on right-of-way plats.
   f. Assembles plats and plans with necessary computations and supporting data.
   g. Corrects plans following reviews.

4. Designs and maintains standard plates to adhere to state and federal regulations.
    a. Designs new or revises existing standards.
    b. Maintains and manages electronic standard files.
    c. Selects and distributes standards upon request.

5. Performs other work as assigned.

D. Reporting Relationships:

Reports to a supervisory engineer. Does not supervise.

E. Challenges and Problems:

Challenged to develop the necessary concepts that clearly portray the intention of the engineer. This is challenging because of the variety and number of criteria that must be compiled, calculated, and included in the construction plans. Further challenged to maintain deadlines on multiple projects that are being developed by several different offices.

Problems include making timely changes following reviews, maintaining consistency in plan sheets, staying current on changes in notes, reading old and unclear plans, and ensuring that landowner agreements have been addressed.

F. Decision-making Authority:

Decides the form a drawing will take within office procedures; if plan sheets meet drafting standards and contain sufficient detail to properly depict the project design; types and locations of fences; easements that conform with landowners' requests; arrangement of notes, tables, and standards on individual plan sheets; if order of plan sheets complies with department standards; whether to conduct research on title certificates; recommends reduction of project work limits; recommends additional surveys; and recommends new techniques and procedures.

Decisions referred include project assignment and priority, answers to questions about design, final approval of plans, proper office standards, and final approval of requests for additional surveys.

G. Contact with Others:

Daily contact with other staff to exchange project information, with design engineers to clarify project design requirements, and with computer support personnel for assistance in file management; weekly with contractors to exchange information about project sites; and monthly with consultants to provide information about office standards and plan development.

H. Working Conditions:

Typical office environment.

I. Knowledge, Skills, and Abilities:

Knowledge of:

- conventional and automated designing standards, symbols, techniques, and equipment;
- mathematics such as basic algebra, geometry, trigonometry;
- weights and measures;
- engineering calculations and notes;
- survey data;
- property plats and terminology such as property corners; and section, township, and lot lines;
- topographical maps and aerial photographs;
- construction plans, notes, and special provisions;
- construction sequences and terminology;
- department standards and procedures;
- building codes.

Ability to:

- read and interpret engineering calculations and survey data, and create graphic designs from them;
- use computer designing technology and equipment;
- mathematically calculate distances, elevations, angles, curves, cross-sections, slopes, etc., and design them to scale;
- mathematically calculate acreage and cost estimates of material quantities;
- communicate sufficiently to understand directions;
- prioritize assigned work.